WHAT IS CLAIMED IS:

1. A device for contacting at least two chemical species, comprising:

a support plate having a channel for receiving a mobile chemical species; and

a fiber having a immobilized chemical species thereon, wherein said fiber is disposed on said support plate such that at least a portion of said fiber is exposed to said channel.

2. The device of claim 1 wherein said fiber is an optical fiber.

3. The device of claim 1 wherein at least a portion of one of said channels has a curved bottom surface.

4. The device of claim 3 wherein said curved bottom surface has a reflective coating.

5. The device of claim 1 wherein said support plate further comprises a plurality of said channels for receiving a mobile chemical species, and further comprising a plurality of said fibers disposed on said support plate wherein at least a portion of each of said fibers is exposed to each of said channels.

6. The device of claim 5 further comprising:

a light source for producing light; and

a focusing lens for directing said light to an end of at least one of said fibers.

7. The device of claim 6 further comprising a motion device connected to said light source and said focusing lens to move said light source and said focusing lens such that an end of each of said fibers receives said light from said focusing lens.

8. The device of claim 6 further comprising a motion device connected to said support plate such that an end of each of said fibers receives said light from said focusing lens.

9. The device of claim 5 further comprising a plurality of conductive contacts attached to said support plate wherein each of said conductive contacts is separately in contact with an end of each of said fibers, and wherein each of said fibers is conductive.

10. The device of claim 9 further comprising a power supply electrically connected to at least one of said conductive contacts.

11. The device of claim 10 further comprising a switching device electrically connected to said power supply and to each of said conductive contacts, wherein said switching device allows power to be supplied sequentially to each of said conductive contacts.

12. The device of claim 5 further comprising a fluid dispensing device positioned adjacent said support plate capable of releasing the mobile chemical species into at least one of said channels.

13. The device of claim 12 wherein said fluid dispensing device has a plurality of dispenser openings wherein each of said dispenser openings is aligned with one of said channels and further comprising a motion device for moving said fluid dispensing device along said support plate.

14. The device of claim 5 further comprising a plurality of channel inlet ports, each fluidly connected to one of said channels.

15. The device of claim 14 wherein said plurality of channel inlet ports each has an opening for receiving the mobile chemical species that is larger than the cross-sectional area of one of said channels.

16. The device of claim 14 further comprising a plurality of channel outlet ports, each fluidly connected to one of said channels.

17. The device of claim 5 further comprising a clear cover plate.

18. An apparatus for detecting the binding of two chemical species, comprising:

a support for holding a plurality of fibers substantially parallel to each other and having a plurality of channels aligned substantially parallel to each other for receiving a mobile chemical species, such that each fiber is in fluid communication with the mobile chemical species;

a photo-detector for receiving excitation light emitted from a mobile chemical species bound to an immobilized chemical species on a fiber;

a light source for producing light;

a focusing lens for directing said light to an end of the fiber; and

an electrical measuring device electrically connected to said photo-detector.

19. The apparatus of claim 18 wherein said photo-detector further comprises a detector optic connected to said photo-detector for receiving excitation light emitted from a mobile chemical species bound to an immobilized chemical species on the fiber.

20. The apparatus of claim 19 wherein said detector optic comprises a fiber optic having a diameter greater than that of the fiber.

21. The apparatus of claim 18 wherein said focusing lens comprises a cylindrical lens.

22. The apparatus of claim 18 wherein said electrical measuring device comprises an analog to digital converter.

23. The apparatus of claim 18 further comprising a plurality of said photo-detectors for receiving excitation light emitted from a mobile chemical species bound to an immobilized chemical species on the fiber, wherein said electrical measuring device is electrically connected to each of said plurality of photo-detectors.

24. The apparatus of claim 23 further comprising a motion device for moving said support such that an end of each of the fibers receives said light from said focusing lens.

25. The apparatus of claim 24 wherein at least one of said channels has a curved bottom surface.

26. The apparatus of claim 18 further comprising a temperature control device for controlling the temperature of the fiber.

27. The apparatus of claim 26 wherein said temperature control device changes the temperature of the fiber over a predetermined range of temperature such that the temperature of the fiber will pass through an optimum temperature for binding of a mobile and an immobilized chemical species.

28. An apparatus for contacting at least two chemical species, comprising:

a wheel having a perimeter sidewall;

an immobilized chemical species disposed on said perimeter sidewall; and

a container for receiving a mobile chemical species and at least a portion of said perimeter sidewall, whereby said immobilized chemical species contacts the mobile chemical species.

29. The apparatus of claim 28 wherein said immobilized chemical species is disposed on a fiber which is disposed on said perimeter sidewall.

30. The apparatus of claim 29 wherein said wheel defines a center wheel aperture, and further comprising:

a wheel rotation device; and

a rotational coupler coupled at its first end to said wheel rotation device and coupled at its second end to said wheel aperture.

31. The apparatus of claim 31 wherein said container defines a cavity having a cavity sidewall that is configured to define an annular chamber gap between said cavity sidewall and said perimeter sidewall.

32. The apparatus of claim 32 wherein said chamber gap is about 1 mm.

33. The apparatus of claim 29 further comprising a container rotation device for rotatably coupling with said container.

34. The apparatus of claim 29 further comprising a heating element thermally coupled to said container.

35. The apparatus of claim 29 further comprising:

a light source for emitting light to an end of said fiber; and

a light detecting device for receiving excitation light emitted from said fiber.

36. The apparatus of claim 35 wherein said light evaluating system further comprises a light guiding device comprising:

a first focusing lens positioned between said light source and said fiber;

a second focusing lens positioned between said one of said fibers and said light detecting device; and

a focusing mirror configured to reflect light toward said light detecting device.

37. The apparatus of claim 29 further comprising:

a rotational coupler;

a wheel assembly comprising a plurality of said wheels coupled to said rotational coupler;

a multi-cavity container defining a plurality of cavities, each of said cavities capable of receiving at least a portion of one of said wheels; and

a wheel rotation device coupled to said rotational coupler.

38. An apparatus for presenting a chemical species for reaction, comprising:

a wheel having a perimeter sidewall;

at least one fiber disposed on said perimeter sidewall; and

an immobilized chemical species disposed on said fiber.

39. An apparatus for synthesizing a chemical species on a fiber, comprising:

at least one depositor capable of depositing a chemical species precursor on a fiber;

a transporter for bringing the fiber and the chemical species precursor into proximity with one another such that the chemical species precursor is deposited on the fiber; and

a selector for controlling the order in which each of a plurality of chemical species precursors is deposited on the fiber;

whereby a predetermined chemical species is synthesized on the fiber.

40. An apparatus according to claim 39, further comprising a plurality of said depositors, wherein each of said depositors comprises a bath capable of receiving a chemical species precursor.

41. An apparatus according to claim 40, wherein said transporter comprises a dipping mechanism for positioning the fiber in each of said baths.

42. An apparatus according to claim 41, wherein said selector controls said dipping mechanism such that said transporter selectively passes the fiber through a predetermined set of said baths in a predetermined order.

43. An apparatus according to claim 39 further comprising a plurality of said depositors, wherein each of said depositors further comprises a wicking mechanism for directly applying the chemical species precursor to the fiber.

44. An apparatus according to claim 39 further comprising a plurality of said depositors, wherein each of said depositors further comprises a spraying mechanism for spraying the chemical species precursor onto the fiber.

45. An apparatus according to claim 44, wherein said selector controls said conveyor system, such that said conveyor system selectively brings the fiber into proximity with said wicking mechanism in a predetermined order.

46. An apparatus according to claim 39 further comprising a plurality of said depositors, wherein said transporter comprises a conveyor system for bringing the fiber into proximity with each of said depositors.

47. An apparatus according to claim 39 further comprising a plurality of said depositors, wherein a subset of said plurality of depositors form a cylindrical hub rotatable about a central axis; said transporter comprises a conveyor system for passing the fiber through each of said baths; and said selector comprises a motor for rotating said cylindrical hub about sad central axis and a computer processor for controlling said motor.

48. An apparatus according to claim 47, wherein said apparatus further comprises a plurality of hubs.

49. An apparatus according to claim 48, wherein said apparatus further comprises at least one spool capable of storing the fiber.

50. An apparatus according to claim 47, wherein said apparatus further comprises at least one cutting module for severing the fiber.

51. An apparatus according to claim 47, wherein said apparatus further comprises a deprotection module for removing protection chemicals from the fiber.

52. A fiber for presenting an immobilized chemical species to a mobile chemical species, comprising a fiber having an immobilized chemical species immobilized thereon.

53. The fiber of claim 52 wherein said fiber is an optical fiber.

54. A system for reading a microchip comprising:

a plurality of optical fibers each having a polynucleotide probe immobilized thereon and each having a first end;

a support for said plurality of fibers having a plurality of parallel and fluidly independent channels for receiving a first analyte, wherein said plurality of fibers are arranged in parallel on said support and substantially normal to said plurality of channels, thereby forming a matrix of contact positions between each of said fibers and each of said plurality of channels, such that each of said fibers is contacted by said first analyte;

a light source for generating light;

a focusing lens for focusing said light on an end of each of said fibers;

a light detecting device positioned to receive light emitted from each of said contact positions; and

a motion device connected to said support to align each of said ends with said light.

55. A method for contacting at least two chemical species, comprising:

immobilizing an immobilized chemical species on a fiber;

placing said fiber on a support having a channel; and

disposing a mobile chemical species into said channel such that said immobilized chemical species contacts said fiber.

56. The method of claim 52 wherein said immobilizing step includes immobilizing a different polynucleotide on each of a plurality of said fibers.

57. The method of claim 55 further comprising the step of moving said second chemical along said at least first one of said channels.

58. The method of claim 57 wherein said moving step includes the step of applying electro-osmotic force to said at least first one of said channels.

59. A method for analyzing the contact between at least two chemical species, comprising:

immobilizing an immobilized chemical species on at least a first one of a plurality of optical fibers;

placing said plurality of fibers on a support having a plurality of channels;

disposing a mobile chemical species into at least a first one of said plurality of channels such that said mobile chemical species contacts at least said first one of a plurality of optical fibers;

directing light to an end of said at least a first one of a plurality of optical fibers; and

viewing the light emitted from said at least a first one of a plurality of optical fibers.

60. The method of claim 59 wherein said directing step is accomplished by directing said light through a focusing lens.

61. A method for making a microchip having a plurality of contact points, comprising:

immobilizing each of a plurality of known chemical species on a separate fiber; and

placing each of said fibers on a support having a plurality of parallel and fluidly independent channels for receiving an analyte, wherein said plurality of fibers are arranged in parallel on said support and substantially normal to said plurality of channels, thereby forming a matrix of contact positions between a portion of each of said fibers and each of said plurality of channels, such that each of said fibers is contacted by said analyte.

62. The method of claim 61 wherein said plurality of known chemical species are polynucleotide probes.

63. The method of claim 62 wherein said fibers are optical fibers.

64. A method for detecting the binding of two chemical species, comprising the steps of:

directing light to a fiber positioned in a support for holding a plurality of fibers substantially parallel to each other and having a plurality of channels aligned substantially parallel to each other for receiving a mobile chemical species, such that each fiber is in fluid communication with the mobile chemical species, where the fiber has an immobilized chemical species that has been contacted with the mobile chemical species; and

detecting excitation light emitted from said chemical species bound to said immobilized chemical species.

65. The method of claim 64 wherein said detecting step comprises the steps of:

collecting said excitation light to produce collected excitation light; and

converting said collected excitation light into an electrical signal that is proportional to said collected excitation light.

66. The method of claim 65 wherein said detecting step comprises the step of detecting light emitted from said labeled chemical species at a plurality of predetermined locations along said fiber.

67. The method of claim 65 further comprising the step of gradually changing the temperature of the fiber over a predetermined range of temperature such that the temperature of said fiber will pass through an optimum temperature for binding of a mobile and an immobilized chemical species.

68. A method for synthesizing a chemical species on a fiber comprising the steps of:

determining an order for depositing a plurality of chemical species precursors on a fiber; and

depositing each of said precursors on said fiber in said order to synthesize a predetermined chemical species.

69. A method according to claim 68, wherein said method further comprises the step of contacting said fiber with a preparatory solution.

70. A method according to claim 68, wherein said method further comprises the step of contacting said fiber with a post depositing solution.

71. A method according to claim 68, wherein said method further comprises synthesizing an oligonucleotide on the fiber.

72. A method according to claim 68, further comprising the step of removing deprotection groups from the fiber.

73. A method according to claim 65, further comprising the step of verifying the chemical composition of said chemical species.

74. A method for analyzing the contact between two chemical species comprising the steps of:

synthesizing a predetermined chemical species on a fiber;

contacting said fiber with a mobile chemical species;

passing light to said fiber;

detecting excitation light emitted from said fiber.